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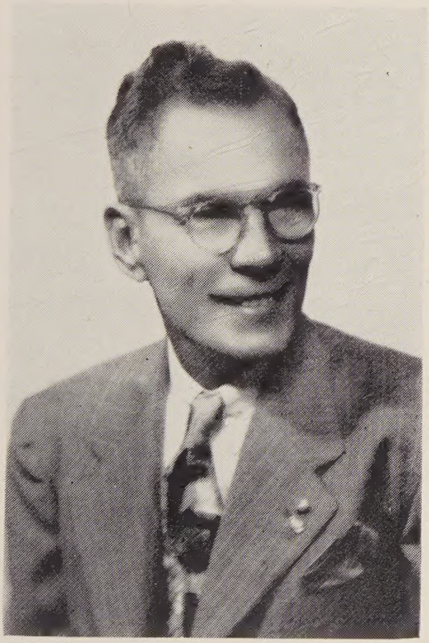

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# PROFESSIONAL ENGINEER

"The Voice of the Engineer"

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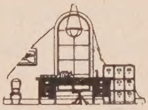

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*M. E. McIVER, Editor*

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# A.A.E. Accomplishments

1. A.A.E. was the first organization to institute collective action by engineers in defense of their "social and economic" rights.

2. A.A.E. established the first society-placement service, rendering at the same time vocational guidance in engineering.

3. A.A.E. was the first national organization to undertake systematic studies of employment conditions, based on facts assembled by its employment service and supplemented by extensive investigation.

4. A.A.E. was the first national organization to set up standards of classification and schedules of compensation for professional engineers. (New edition in preparation)

5 A.A.E. was the first, and for many years the only champion of registration. It provided money and leadership for state groups and was instrumental in securing passage of laws in 22 states. It is the only champion today of effective registration laws—laws that protect the initial grades of practice and control entrance to the profession.

6. A.A.E. was the first national engineering society to campaign actively for broader engineering education; to institute study courses in business law, economics, accountancy, report writing, and other subjects designed to increase the non-technical efficiency of engineers. A.A.E. was the first national society to attempt a classification of engineering schools; and the only society to lead an active campaign against dishonest trade and correspondence schools.

7. A.A.E. was the first national society to formulate a "code of ethics"; the first to establish a "practice committee" to analyze ethical aspects of specific cases; the first to codify "principles of professional conduct" crystallized in practice committee procedures; these principles became the basis of the code adopted by all the major societies ni 1927.

8. ,A.A.E. was the first, and is thus for the only national organization to offer free accident and dismemberment insurance to its members.

9. A.A.E. was the first national society to coach its chapters in public relations technique and to campaign systematically for better understanding of engineering's social contribution by the laity.

10. A.A.E. was the first national society to encourage its chapters to take part in civic affairs—an activity which the conservatives considered tantamount to "mixing in politics."

11. A.A.E. was the first national society to represent engineers in collective bargaining—bargaining which was effective but conformed to principles of professional conduct.

12. A.A.E. was the first society to undertake studies of services and fees of engineers in private practice. Findings of the committee were embodied in a booklet called "How to Employ and Use Engineering Services". (New edition in preparation.)

# *Unlimited Fields*

### By HOWARD R. PATTERSON, Director, A.A.E.

DO you impress others in relation to your true value? Before you answer, here is a quotation from a quote of a quote:

"To be frank, I feel that most engineers allow themselves to get strictly into engineering ruts and do not see the necessity of looking at the commercial side of engineering problems; but if the man with engineering knowledge has the ability to grasp the matters mentioned above, with a further ability to organize his work, and to avail himself of the brains of others in lines in which he is not schooled, I feel that the civil engineer should make a success in his profession.

"There is one qualification, however, that I have entirely omitted; that is, no matter how well educated, how well read, or how deep a thinker the engineer may be, he should have the ability to be at home with any and all the citizens who employ him."

This is a quote from an article on Personal Efficiency, which appeared in the October, 1934, issue of PROFESSIONAL ENGINEER quoted from a 1921 issue of the same magazine. Shame, shame! I fear, Brother Engineers, we are hopeless. The statement made in 1921 was true; it was true in 1934. Before you ask yourself whether or not it is true today, think over your own and your fellow engineers' activities. Do you impress others in proportion to your true value?

If you as an engineer wish to increase the possibilities of getting a top position in your organization you must sell yourself to others and investigate avenues in addition to Engineering. By so doing you will increase not only your apparent and real value to your employer thereby meriting reward, but you will also be increasing the prestige of your profession. The next time you wish for the promotion that the other fellow got, look to yourself for the reason the desired advancement was not forthcoming. Then make an effort to sell yourself.

Selling yourself to others is really very simple. It is getting out of the cubby hole in the laboratory or getting your nose off that grindstone in the factory long enough to pass the time of day, whenever the occasion arises, with others outside of your immediate engineering surroundings. Don't confine all of your time to fellow engineers nor all of your conversation to engineering subjects. The purchasing agent or the salesman may think that you are dull, that you are not interested in getting out of your engineering group, worse yet, he may not know that you exist unless you meet him half way. The more people who know you as a likeable, human being, with plenty of common sense, the better are your chances for that next important position. So, get into the front office now and then. Join the personnel men at the lunch table, go to your company affairs, or volunteer for extra curricular company work.

If you are looking for real advancement—and who isn't?—you must broaden your fields. Being well met with outside department heads is not enough. You must understand principles of accounting, problems of personnel administration, what makes a good salesman, what is expected in a purchasing department, and so on. You need not be an expert in all these fields, but you should acquire at least a speaking knowledge of the fundamentals, which can be done by reading appropriate books, attending night classes, or simply by keeping your eyes and ears open. Would you as an engineer hire a man for an engineering assistant if he, in his conversation, showed no signs of understanding even fundamental engineering principles? Well, neither will you be considered for advancement outside of your engineering group in your organization if you do not display overall knowledge of the problems of your organization. Start now to expand your horizon.

By preparing yourself for other fields you increase your chances of getting to the top. If, as an engineer, you were confronted by a knotty problem having a number of possible obvious but doubtful solutions and the problem had to be solved in a short time would you work on only one solution? Or would you work simultaneously on as many as practical? Which approach is most likely to get a correct solution on time? If you will try avenues other than direct engineering you will increase the number of roads to the top, and thereby increase your chances of getting to the top. Besides, competition may not be as stiff in other fields, for as a rule men in non-engineering fields have not been trained to think as logically as you have or have not had to work as hard to get through school. Your fellow engineers are top notch men, too, you know, and will give you a run for your money if you stay in your present engineering group. If there are other phases of business that are of interest to you or that you believe you would do well in, investigate them and expand those possibilities. When the occasion arises do not fail to make your desires known to your superiors.

Getting ahead isn't so mysterious, and just something to be wished for. In fact, it is a simple procedure. By learning how to meet men of other departments you advertise your own stock and by learning something of the operation of the other departments you increase not only your value to your employer but also increase your avenues for advancement. Advancement to the top means reward for you and an increase in the prestige of your profession. Are you going to remain a stuffy engineer, an automaton servant to the modern world? Of course not. But if you do, blame yourself.

Start now to do something constructive about your future and the future of the Engineering profession. If you as an engineer will use the engineering approach in your everyday problems as well as in your technical problems you will find unlimited fields before you.

Oh yes. In the meantime do the best job ever turned out in the position you now have.

# *Some Engineering Activities in Puerto Rico*

**By RAMON HECTOR GUERRA,**
**Member, Institute of Engineers of Puerto Rico**

## XII Annual Convention of The Institute of Engineers

Hon. Orlando R. Mendez, Colonel Cesar Cordero Davila (P.R.N.G.) and Hon. Angel Dos Silva, of the civil engineering branch, were respectively reelected as President, Vice-President and Treasurer of the Board of Directors by the last Annual Convention (XII Convention) of the Institute of Engineers of Puerto Rico, on November 11, 12, and 13, 1949.—Said Annual Convention was held at Roosevelt City (Eleanor Roosevelt Development), Hato Rey, Rio Piedras, just in the new building of the Institute, which has been named by the Convention as the true "House of the Engineers in Puerto Rico". It is a two-story building, all of reinforced concrete, being layout in an urban lot of 2,538 square meters (purchased to the Reconstruction Administration of Puerto Rico), equivalent to 25,549 square feet. The area occupied by the construction at the present time (floor area of the building) amounts to 15,800 square feet. According to a public statement given by Mr. Alfonso E. Arana, Executive Secretary of our Institute, it is expected that the formal inauguration of the new building will take effect on or about June 30, 1950. President Orlando R. Mendez will send cordial invitations to different organizations of the engineering profession of the United States and of Latin-America; also special invitations will be sent to Hon. Luis Munoz Marin, Governor of Puerto Rico, and to other officers and representatives of the National and Insular governments.

## Two Highways Projects Tied to Federal Triangulation

The highways projects of "HATO REY-CATANO ROAD" (F.A. Route No. 8) and "AIRPORT ROAD"—F-41 (1), which are now under construction process by the Division of Construction and Inspection of Roads and Bridges, Department of the Interior of Puerto Rico, has been tied, or connected, to some baselines, or main triangulation stations, of the Federal Triangulation done in Puerto Rico few years ago by the corps of engineers of the U.S. Geological Survey, of Washington, D.C.

Both traverses of the projects have been tied to the plane coordinates ($X$ and $Y$) of the azimuts and distances of the baselines established between Morro Lighthouse to Capitol Building; Capitol Building to University of Puerto Rico; University of Puerto Rico to Central San Jose (Rio Piedras);

and Central San Jose to Morro Lighthouse, this last one considered as main triangulation station.

At "Airport Road" project three auxiliary baselines have been calculated and established after careful instrument readings taken to the tops of Radio Towers of WNEL (2 towers) and WIAC (one tower). Said radio towers are situated at *Isla Verde*, municipality of Carolina, just to the right side of the traverse of "Airport Road", which, when finished, will have a length of four kilometers.

### North Idaho Student Chapter

The student members at North Idaho Junior College have had a good year. They started out with a dinner meeting in the Marine Room of Templin's Grill, and enjoyed a film entitled "Power that brings you Oil" showing the modern methods of production and distribution of oil. A number of guests were present at this meeting, including Dr. Vernon E. Scheid, head of the Department of Geology at the University of Idaho; Dr. Walter Youngquist of the geology department at Idaho; John Zoss, bridge engineer of the U.S. Bureau of Roads, and a member of A.A.E.; Tom Miller, engineer of the Idaho Bureau of Roads; P. A. Christianson, dean of the faculty at N.I.J.C.; Eldon Rainey, head of the N.I.J.C. watch-making department; John Pointner of the Coeur d'Alene Machine and Repair Works, and Everett Lenton of Overjorde Jewelry.

"The highlight of the evening," says Secretary Arvel Fairchild, in his exceptionally well written report to headquarters, "was the talk on Geological Engineering by Dr. Scheid. Dr. Scheid described the various fields of engineering and explained how geology ties in with them, relating numerous examples of his own experience."

Another interesting meeting of the group was held on Washington's birthday at the same Grill, when J. M. Martin, head of the Department of Agricultural Engineering at the University of Idaho, explained briefly and most interestingly what is meant by Agricultural Engineering. Mr. Martin illustrated his talk with slides.

A number of guests were also present at this meeting. We are glad to see the boys inviting other than engineers to their meetings. As we have said so many times, engineers need to broaden their education and one of the best ways is to find out what the other fellow is doing and what he thinks. Congratulations, boys, for the way you are assuming Society duties.

### Chaffey College Chapter

Student chapter activities and duties for this year have been carried on successfully by the following officers: President, Francis Watkins; Vice President, Dick Batchelor; Treasurer, Hugh Stevens; Recording Secretary, Bruce Boshart; Corresponding Secretary, All Hurchalla, and of course at the helm, as always has been Arthur E. Flum, Adviser.

### Everett B. Coffin

Everett B. Coffin, a member of A.A.E. for many years, passed away suddenly last October. He was former city engineer and street commissioner of Waterville, Maine. Mr. Coffin was graduated from the University of Main in 1915 and was employed for a time by the Great Northern Paper Company. While serving as principal of Hallowell High School he resigned to become city engineer, Massillon, Ohio. In 1926 he took up his duties as city engineer, Waterville.

Mr. Coffin was a life member of the National Rifle Association, was an active church member, a Mason and a past member of the Kiwanis club. Mr. Coffin was a good example of an engineer interested not only in his profession but in his home, church and community.

## Films for the Boys

Members of the Bakersfield College Chapter, AAE recently heard an address by C. M. Corbit, Jr., Los Angeles, and representative of the American Institute of Steel Construction, who illustrated his address with a new industrial film entitled "Build with Steel." The meeting was held on the campus and a number of local engineers were invited to attend.

Another interesting film enjoyed by the students was the "World's Largest Workshop," a General Electric film in which the audience is carried on a trip through several of the major factories of the corporation. E. M. Hemmerling is faculty adviser of the chapter.

## Arkansas State College Chapter

Arkansas State College A.A.E. Student Chapter is one of the newest in the student group. It was organized on January 24, under the sponsorship of J. R. Keeton and W. G. Peter, instructors in Civil and Mechanical Engineering, although Robert B. Blakestad, who was head of the Engineering Department, is responsible for its inception.

Mr. Peter is a graduate of the University of Minnesota, and Mr. Keeton is a graduate of the Missouri School of Mines and Metallurgy. Both of these universities are very dear to the heart of A.A.E. because of active participation in the work of the Association over the years by various members of the school faculties. In the Association's early years, Frederic Bass, of Minnesota, with a number of other Deans of Engineering contributed greatly in formulating association plans. Dean Leland, now a life member of the Association, was always a loyal supporter and believer in the aims and objectives of A.A.E. At Rolla, Professor Butler is now and always has been a pillar in A.A.E. appreciating that its ideals and aims are right. Many of the Association's key men have been graduated from these two fine schools, and it is therefore most encouraging to have two of their more recent graduates actively engaged in Association work.

J. R. KEETON
Arkansas State College

The new chapter numbers forty-five charter members, officered by the following: President, Billie R. Taylor; vice president, E. R. Harkonen; secretary, R. Alexander; treasurer, Frank O'Neal.

The first project of the new chapter was the study of the effects of the Taft-Hartley Act upon engineers, indicating that the boys are learning early in their careers something of the business problems of the profession.

We like the way the boys are taking hold, and wish them lots of luck in their chosen profession.

**"To promote Unity in the Engineering Profession" always has been a plank in the A.A.E.'s platform, and ever since its inception it has worked toward that end.**

# A.A.E.'s New Student Gro

Arkansas State College Student chapter was orga
during the year the boys have been acquainting th

# Arkansas State College

ry, 1950. It has a membership of forty-five and some of the business problems of the profession.

# *Book Reviews*

**Elements of Sound Recording,** by Dr. John G. Frayne and Dr. H. Wolfe, both of Electrical Research Products Div., Western Electric Co. Published by John Wiley & Sons, Inc. $8.50.

An excellent textbook treating in detail subjects which belong to the restricted field of sound recording and reproducing. The book is illustrated profusely. Written especially for the practical designer, operating engineer, or technician. Closely related subjects such as electromechanical analogies, acoustics, vacuum tubes, and audio amplifiers are discussed in a highly informative manner.

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**Giant Brains or Machines that Think,** by Edmund C. Berkeley, Consultant in Modern Technology, President, E. C. Berkeley and Associates. John Wiley & Sons, Inc. $4.00.

Here's a book that is fascinatingly written in an easy, understandable style for the layman as well as the professional. It compares machines with human brains and with various types of languages. "Giant Brains" tells a serious and important story—a story that has a vital bearing on our future. A book Americans should read.

**Acoustical Designing in Architecture,** by Vern O. Knudsen, Prof., Physics, Dean, Graduate Div., U. of Calif., and Cyril M. Harris, of the Tech. Staff, Bell Tel. Laboratories. John Wiley & Sons, Inc. $7.50.

A practical guide to acoustical designing in architecture, in two parts. General principles and procedures make up the fore part of the book and specific applications, including design of auditoriums, theaters, school buildings, commercial and public buildings, homes, apartments and hotels, churches, radio, television and sound-recording studios, complete this interesting and most helpful treatise. One of the best on the subject thus far seen.

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**Engineering Economic Analysis,** second edition, by Clarence E. Bullinger, Prof., Industrial Engineering, Pa. State College. McGraw-Hill Book Co. $4.00.

The authors have given the profession a timely revision of this successful text. New chapters on minimum cost analysis, intangible analysis of a project have been added together with many sections which acquaint the student with the economic factors of engineering projects, show him how to evaluate and estimate

## *BOOKS*

In this issue we list a great many of the new technical books for the information of our members. We will do the same in the next issue of the magazine.

Engineers need to keep posted on new methods and new developments, the best way is by a knowledge of the latest books.

Purchase your books through the A.A.E. Book Department—a Service operated for the members of the Association.

costs. A good book on an important subject.

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**Analytic Geometry and Calculus: a unified treatment,** by Frederic H. Miller, Prof., Math., Cooper Union School of Engrg. John Wiley & Sons, Inc. $5.00.

The book is designed to meet the needs of teachers, especially of engineering and science students, who believe that a unified treatment of these subjects is superior to other methods. It is a well-integrated study, and unusual in many respects. Chapter summaries are excellent. An outstanding book.

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**Radiant Heating,** second edition, by T. Napier Adlam, V.P., Sarco Mfg. Corp. Industrial Press. $6.00.

The author, in his revised and enlarged edition, includes the newest developments and the latest information on ceiling panels. He answers many problems in the field for the engineer or contractor interested in applying radiant heating to a residential, commercial, industrial, or institutional building. Included are 78 helpful charts for the easy determination of the pipe size and spacing necessary. First edition was good; this one is better.

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**Methods of Joining Pipe,** by J. E. York, Building Service Engr., Stone & Webster Engineering Corp. Industrial Press. $3.00.

All types of standard and special joints for pipe, including steel, cast iron, copper, brass, Duriron, lead, chemical tile, vitreous tile, stoneware, Transite, wood, glass, synthetic resin, plastic and concrete, are treated in this book, profusely illustrated with detailed drawings. Informative and well prepared.

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**Protection of Transmission Systems against Lightning,** by Walter W. Lewis, Prof., Electrical Engrg., Union College. John Wiley & Sons, Inc. $8.00.

The Author has brought together in this interesting and helpful volume the most important information on lightning. As the book deals largely with the results of tests, experiments and experience, it is almost devoid of mathematics. The book is one of a series of books written in the interest of the General Electric Advanced Engineering program. Comprehensive and instructive.

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**Heating, Ventilating, and Air-Conditioning Fundamentals,** second edition, by William H. Severns, and Julian R. Fellows, both professors of M.E., at the University of Illinois. John Wiley & Sons, Inc. $6.50.

Although the purpose of this revised edition is the same as the first—to present essential fundamentals of heating, ventilating and air conditioning—new material has been added to bring the book up-to-the-minute in this changing field. The book is intended for engineers, architects, and heating contractors, but is as well an excellent textbook for students. Many new illustrations have been added. An all-around good book.

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**Scientific and Technical Abbreviations, Signs and Symbols,** second edition, by O. T. Zimmerman, Ph.D., Prof., Chem. Engrg., University of New Hampshire, and Irvin Lavine, Ph.D., formerly Prof., of Chemical Engrg., and head, Dept., University of North Dakota. Industrial Research Service.

A most informative work prepared first, to make available in one volume principal abbreviations, signs and symbols used in a number of scientific and technical fields; second, to encourage greater uniformity in their use. A much needed book that should be on the shelves of all office and professional libraries.

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**Engineers' Dictionary—Spanish-English and English-Spanish,** second edition, by Louis A. Robb, M., A.S.C.E. John Wiley & Sons, Inc. $12.50.

Author Robb has given the profession another excellent dictionary, well worth the price to those who must have an understanding of Spanish. A new feature of the revised edition is the notation of gender with all Spanish nouns. We highly recommend this book.

**Applied Experimental Psychology,** by Alphonse Chapanis, assistant prof., Psychology; Wendell R. Garner, Dir., psychological Laboratory, Institute for Cooperative Research, and Clifford T. Morgan, Prof., Psychology and Chairman of the Department, all at The Johns Hopkins University. John Wiley & Sons, Inc. $4.50.

In this book the authors tell what experimental psychologists have learned about how men see, hear, and make movements, and they show how this information can be applied to build better machines for human use. In this machine-age, this book has a special appeal.

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**Basic Electronics,** by Royce G. Kloeffler, Prof. El. Engrg., head of Department, Kansas State College, assisted by Maurice W. Horrell, Supervisory Engr., Research Laboratories, Bendix Aviation Corporation. John Wiley & Sons, Inc. $5.00.

Prepared for a first course in electronics, covering fundamentals in condensed form. Many diagrams and equations are included which clarify the text. Up-to-date material has been presented in a logical manner. An excellent textbook.

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**Steam Power Plants,** by Philip J. Potter, University of North Dakota. Ronald Press Company. $6.50.

The purpose of the book is to present engineering fundamentals, as applied to the design of steam power plants, that the author has learned, from his experience, are essential. Subject matter included is of the junior and senior level. An excellent textbook for schools. Ample problems have been included so that the text may be used for several years.

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**Principles of a New Energy Mechanics,** by Jakob Mandelker, Assist. Prof. Mechanics, Georgia Inst. of Technology. Philosophical Library. $3.75.

The New Energy Mechanics stands as a fundamental work within this branch of Physical science. It represents the next step of an evolution, leading from Newton's classical mechanics through Einstein's relativity theory as an intermediate state. A highly technical, but fascinating book for those interested or engaged in this field.

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**Phenomena, Atoms, and Molecules,** by Irving Langmuir, Philosophical Library $10.00.

The author, who won the Nobel Chemistry Award in 1932 for his work in surface chemistry, has set down his thoughts, observations and conclusions in this, his first book, in a most interesting manner. The volume, in its 18 chapters, contains a collection of twenty papers, one-tenth of the papers that the author has written since 1909. His approach to world science is broad in scope yet precise in detail, covering the human, sociological, and international aspects of modern science, along with a comprehensive discussion of atomic progress and possibilities.

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**Elementary Stress Analysis,** by Phillip E. Soneson, Assoc. Prof., Arch. Engrg., Purdue. Pitman Publishing Corpn. $5.00.

A book that the authors intended as a textbook for courses in the analysis of stresses in statically determinate structures. Prof. Soneson has introduced some of the valuable methods and points of view he has learned during his fifteen years of experience in teaching stress analysis. Material on wind loads is an effort to interest our future engineers in a topic of growing importance and to "debunk" the Duchemin formula that is used so blindly by too many engineers.

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**Legal Phases of Engineering: Contracts and Specifications,** by Ivan C. Crawford, C.E., Sc. D. Dean, College of Engrg., Prof., C.E., University of Mich. MacMillan Company. $3.75.

Although primarily written for the student, the book serves as an excellent text for all engineers. Legal relations peculiar to their profession is something engineers should know about, to prevent legal entanglements. One purpose of the book, and an important one, is to teach an appreciation of clear, concise contracts and specifications. Examples are presented.

**Photoelectricity and Its Application,** by V. K. Zworykin, E.E., Ph.D., Director of Electronic Research, V.P. and Tech. Consultant, Radio Corp. of America, and E. G. Ramberg, Ph.D., Research Physicist, R.C.A. Laboratories Div. John Wiley & Sons, Inc. $7.50.

This volume replaces the second edition of Photocells and Their Application by Zworykin and Wilson. It retains the aim of its predecessor—to present the reader with practical reliable data on the properties, preparation and applications of photoelectric devices. Since so many developments have taken place since the second edition, this new book is twice as large. Text matter is accompanied by circuit diagrams, graphs, halftones and line drawings, all practical rather than theoretical.

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**Partners in Production—A Basis for Labor-Management Understanding,** by the Labor Committee, The 20th Century Fund, assisted by Osgood Nichols. $1.50.

The 6th report of the 20th Century Fund on Labor-Management relations and public policy. A document for the times, inasmuch as the committee has formulated a new philosophy of labor-management relations on which both labor and management could agree. Food for thought in the report.

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**Refresher Notes for Professional Engineers,** by John D. Constance. Price $4.50.

This book should prove of great value to engineers seeking registration for professional licensure. The author has screened past examination papers and has included in his work only the essentials. The book is exceptionally well written; in fact, it is an engineering course in itself. No candidate for registration can afford to be without it. There is also included with the book a brochure of past examinations of the State of New York. Highly recommended.

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